GLOSSARY

TERMS AND COMMONLY ABBREVIATED ORGANIZATIONS

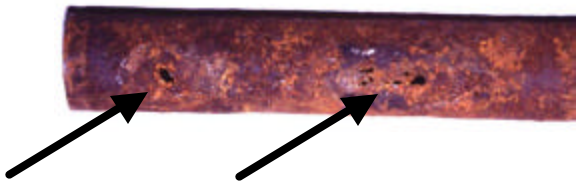
TERMS

A

ABANDONED PIPELINE: A pipeline that is physically separated from its source of gas and is no longer maintained under 49 CFR Part 192.

ABANDONMENT: The process of abandoning a pipeline.

ACTIVE CORROSION: Continuing corrosion which, unless controlled, could result in a condition that is detrimental to public safety.



ACTUATOR: A device designed to shut off gas flow upon flame failure, pilot outage, control impulse, overpressure, or underpressure without a person being physically at the location. Valve actuators on mainline transmission systems are primary operated by pushing a button at a control station.

ADHESIVE JOINT: A joint made in plastic piping by the use of an adhesive substance which forms a bond between the mating surfaces without dissolving either one of them.

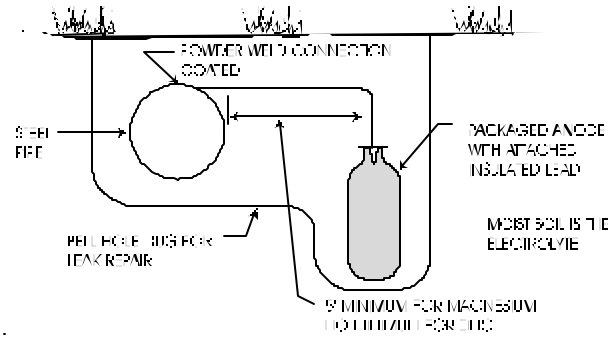
ADMINISTRATOR: The Administrator of the Research and Special Programs Administration or any person to whom authority in the matter concerned has been delegated by the Secretary of Transportation.

ALTERNATING CURRENT (AC): A current whose direction changes with time (e.g., commercial electricity used to run home appliances).

AMBIENT TEMPERATURE: The temperature of the surrounding medium, usually used to refer to the temperature of the air in which a structure is situated or a device operates.

ANHYDROUS AMMONIA: A colorless gas with a pungent suffocating odor. It is shipped as a compressed gas, which is considered to be a hazardous liquid. Will burn skin if touched and can be deadly if inhaled.

ANODE: A positive electrode in an electrolytic system, such as applied in cathodic protection; the electrode at which oxidation or corrosion occurs.



ANODELESS RISER: A steel casing with a plastic pipe inside. The plastic pipe inside the steel casing is the service line carrying gas to the customer meter.

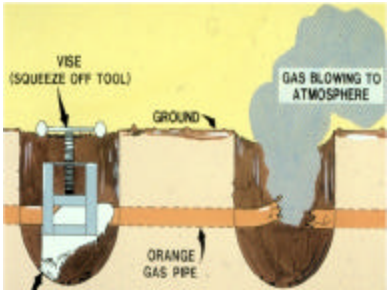
B

BALL VALVE: A valve in which a pierced sphere rotates within the valve body to control the flow of fluids.

BAR HOLE: A small diameter hole made by a plunger bar in the ground along the route of the gas pipe when searching for gas leaks. (Is a process of checking the sub-surface atmosphere for gas leaks.)

BARLOW'S FORMULA: See HOOP STRESS.

BELL HOLE: A hole dug along the side of pipelines or in a trench to allow room for workmen to make a joint in the pipe, repairs to the pipe, welding steel pipe, or replacing pipe. In the broad sense, any hole, other than a ditch, opened for pipeline work.

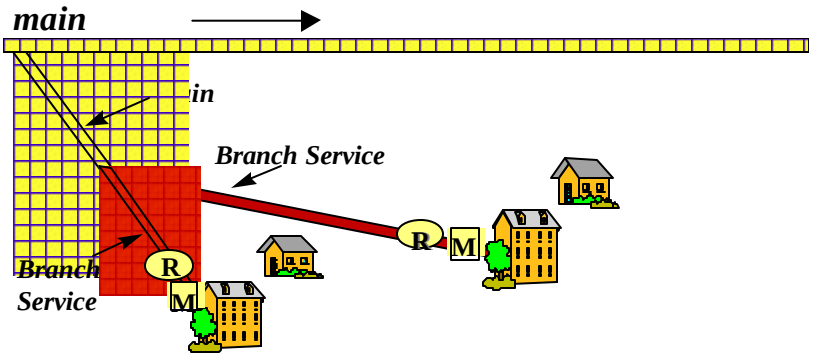


BOILING POINT: The temperature at which a liquid changes into a gas or a gas changes into a liquid (e.g., natural gas boiling point is approximately -260° F).

BOTTLE: A gastight structure completely fabricated from pipe with integral drawn, forged caps and tested in the manufacturer's plant.

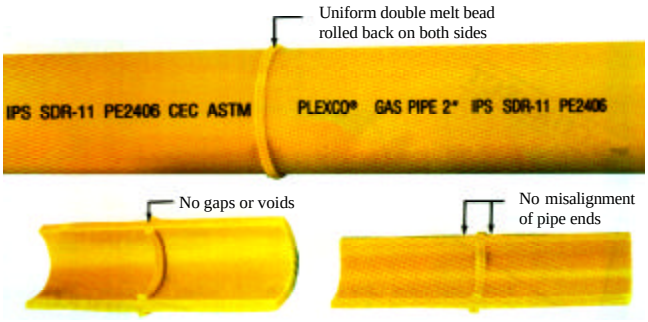
BOTTLE-TYPE HOLDER: Any bottle or group of interconnected bottles buried underground in one location and used for the sole purpose of storing gas. (per ASME Guide)

BRANCH SERVICE LINE: A branch service line can be a main to the branch point (common source of supply). If the branch point is underground, much of the service line can be a main. If the branch is aboveground at a bank of meters, all of the service line can be a main, part of which being aboveground.

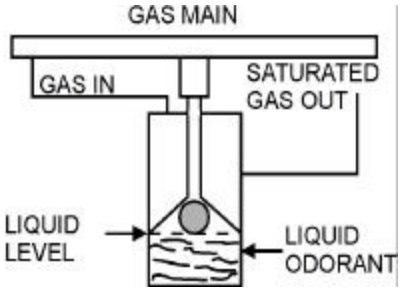


BRITISH THERMAL UNIT (BTU): The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit. A common unit of measurement for gas prices. See THERM.

BUTT FUSION JOINT: This technique consists of heating the squared ends of matching surfaces by holding them against a heating plate until fusion temperature is reached, pushing the two softened ends against one another, holding under pressure for the prescribed manufacture's time, and allowing the joint to cool.



BY-PASS TYPE ODORIZER: The equipment in which a portion of the main gas stream is diverted, by an orifice plate or partially closed valve in the line through a tank provided with baffles or wicking. The odorant-saturated portion of the by-pass gas is then returned to the stream. Generally used for low, more uniform flows.



C

CARBON STEEL: By common custom, steel is considered to be carbon steel when (1) no minimum content is specified or required for aluminum, boron, chromium, cobalt, columbium, molybdenum, nickel, titanium, tungsten, vanadium, zirconium, or any other element added to obtain a desired alloying effect; (2) the specified minimum content does not exceed 1.65 percent for manganese or 0.60 percent for copper.
All carbon steels may contain small quantities of unspecified residual elements unavoidably retained from raw materials. These elements (copper, nickel, molybdenum, chromium, etc.) are considered incidental and are not normally determined or reported.

CAST IRON: Applies to gray cast iron which is a cast ferrous material in which a major part of the carbon content occurs as free carbon in the form of flakes interspersed through the metal.

CATHODIC PROTECTION (CP): A cathodic polarization method that is widely and effectively used to limit corrosion.

CENTERING : The process of approximating a leak location.

COMBUSTIBLE GAS INDICATOR (CGI): Used as a leakage detection instrument for subsurface and confined area surveys. It is also used to center, pinpoint and classify a gas leak.

COMBUSTION: The process of burning.

COMPRESSED NATURAL GAS (CNG): Natural gas stored inside containers at a pressure much higher than normal air pressure. It is used in vehicles and other applications not attached to a pipeline.

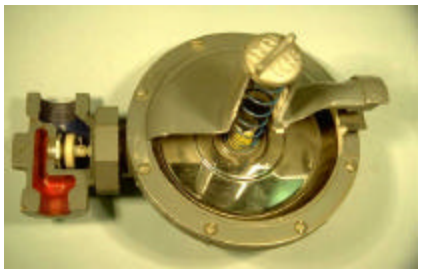
COALESCENCE: Produced by heating with an electric arc or arcs between the bare metal electrode or electrodes and the work.

CURB VALVE: A valve installed for the purpose of shutting off the gas supply to a building. It is installed below grade in a service line, at or near the property line. It is operated by use of a removable key or wrench, through a curb box or standpipe.

CRITICAL BOND: A compensating bond attached between offending pipelines or other metallic structures to reduce or eliminate stray current interference and whose failure would jeopardize protection of the structure.

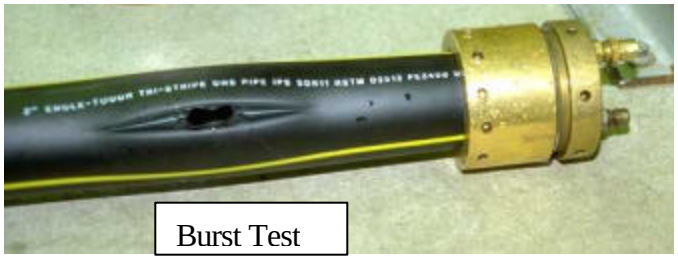
CUSTOMER METER: A device which measures gas delivered to a customer for consumption on the premises.

CUSTOMER REGULATOR: A device that maintains a set pressure to the customer.

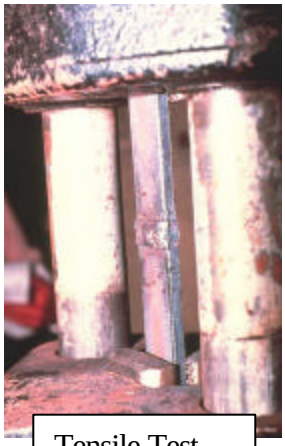


D

DESTRUCTIVE TESTING: Testing in which the part being tested is rendered unusable to prove the strength of the part being tested.



Burst Test



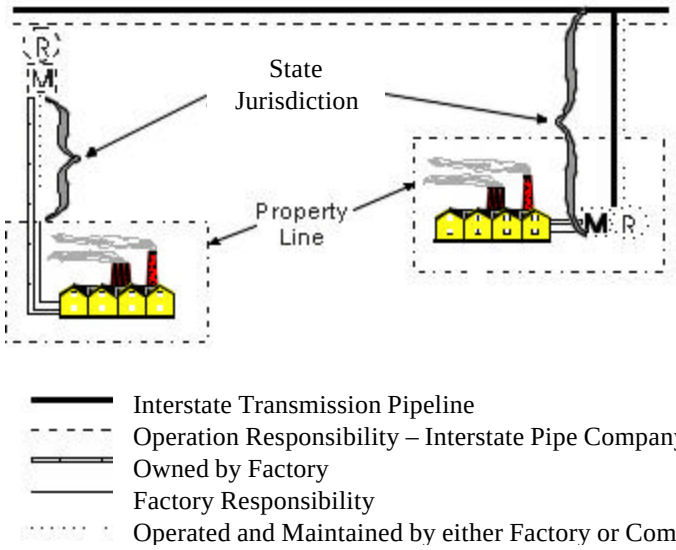
Tensile Test

DETERMINE: To establish or ascertain definitely after considering an investigation or calculation.

DIRECT CURRENT (DC): The opposite of AC; DC current stays constant over a period of time (e.g., a flashlight battery).

DIRECT SALES LATERAL (INTRASTATE OR INTERSTATE SALES LATERAL): A pipeline that transports gas to a large volume customer such as a factory or power plant. This pipeline is upstream from a distribution center or directly off of a transmission line. This pipeline by definition is a transmission line and is jurisdictional to the state pipeline safety program if one exist.

Operator Responsibility – Intrastate Lateral

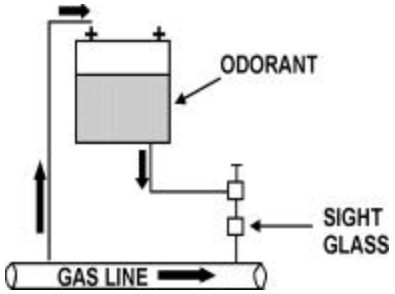


DISCOVERY: To gain knowledge of something through: observation, study, or search; to be the first to find, learn, or observe.

DISTRIBUTION LINE: A pipeline other than a gathering or transmission line.

DOUBLE SUBMERGED ARC WELDED PIPE: A pipe having longitudinal or spiral butt joints. The joints are produced by at least two passes, including at least one each on the inside and on the outside of the pipe. The welding is shielded by a blanket or granular, fusible material on the work. Pressure is not used and filler metal for the inside and outside welds is obtained from the electrode or electrodes. Typical specifications: ASTM A 381, API 5 L.

DRIP TYPE ODORIZER: Equipment for introducing odorant from a storage tank directly into a gas stream through gravity flow. The odorant may be regulated by orifice float valves, or rotameters.



DUCTILE IRON (SOMETIMES CALLED NODULAR IRON): A cast ferrous material in which the free graphite present is in a spherical form rather than a flake form. The desirable properties of ductile iron are achieved by means of chemistry and a fertilizing heat treatment of the castings.

E

ELBOW or ELL: A pipe fitting that makes an angle in a pipe run. Unless stated otherwise, the angle is usually assumed to be 90 degrees. Compare STREET ELL.

ELECTRIC-FLASH-WELDED PIPE: Pipe having a longitudinal butt joint wherein coalescence is produced, simultaneously over the entire area of abutting surfaces, by the heat obtained from resistance to the flow of electric current between the two surfaces, and by the application of pressure after heating is substantially completed. Flashing and upsetting are accompanied by the expulsion of metal from the joint. Typical specification: API 5L. See PIPE MANUFACTURING PROCESS.

ELECTRIC-FUSION-WELDED PIPE: Pipe having a longitudinal butt joint wherein coalescence is produced in the performed tube by manual or automatic electric-arc welding. The weld may be single or double and may be made with or without the use of filler metal. Typical specifications:

ASTM A 134, ASTM A 139: Single or double weld is permitted with or without the use of filler metal.

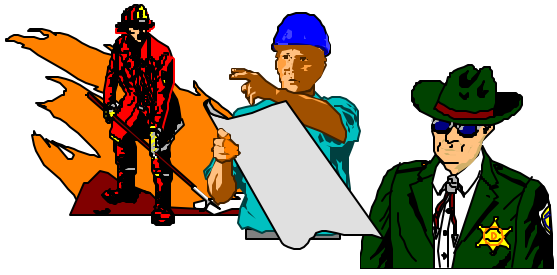
ASTM A 671, ASTM A 672, ASTM A 691, and API-5L: Requires both inside and outside welds and use of filler metal.

Spiral-welded pipe is also made by the electric-fusion-welded process with either a butt joint, a lap joint or a lock-seam joint. Typical specifications:

ASTM A 134, ASTM A 139, and API 5L: Butt joint.
ASTM A 211: Butt joint, lap joint or lock-seam joint.
See PIPE MANUFACTURING PROCESS.

ELECTRIC-RESISTANCE-WELDED PIPE (ERW): Pipe which has a longitudinal butt joint wherein coalescence is produced by the application of pressure and by the heat obtained from the resistance of the pipe to the flow of an electric current in a circuit of which the pipe is a part. It is produced in individual lengths, or in continuous lengths from coiled skelp and subsequently cut into individual lengths. Typical specifications: ASTM A 53, ASTM A 135, API 5L. See PIPE MANUFACTURING PROCESS.

EMERGENCY RESPONSE PERSONNEL: Any persons engaged in the response to hazardous materials emergency, including firefighters, police, civil defense/emergency management officials, sheriffs, military, manufacturing and transportation personnel.



EXPOSED LINE: A pipeline where the top of the pipe is protruding above the seabed in water less than 15 feet deep, as measured from the mean low water.

EXPLOSIVE: Chemical material that can undergo a sudden and violent release of pressure and heat.

F

FLAME IONIZATION (FI): Used as a leakage detection instrument for surface surveys. It indicates the presence of gas in parts per million (PPM).

FLAMMABLE: A substance that will burn readily or quickly.

FLAMMABLE (EXPLOSIVE) RANGE: The range of a gas or vapor concentration that will burn or explode if an ignition source is introduced. Limiting concentrations are commonly called the "lower explosive or flammable limit" (LEL/LFL) and the "upper explosive or flammable limit" (UEL/UFL). Below the explosive or flammable limit the mixture is too lean to burn and above the upper explosive or flammable limit is too rich to burn.

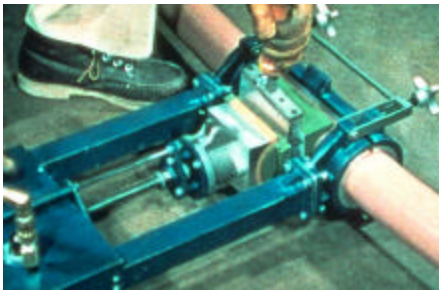
Physical Properties of Various Explosive Liquids and Gases

MATERIAL	Chemical Formula	Specific Gravity Air = 1	Ignition Temp ºF in Air	Lower Expl.Limit (% gas)	Upper Expl.Limit (% gas)
Methane	CH_4	.55	1193	5.3	15.0
Natural Gas	Blend	.65	1163	4.5	14.5
Ethane	C_2H_6	1.04	993-1101	3.0	12.5
Propane	C_3H_8	1.56	957-1090	2.2	9.5
Butane	C_4H_{10}	2.01	912-1056	1.9	8.5
Hexane	C_6H_{14}	3.0	437	1.1	7.5
Gasoline	Blend	3-4.0	632	1.4	7.6

Acetone	C_3H_6O	2.0	869	2.5	12.8
Benzene	C_6H_6	2.8	928	1.2	7.8
Carbon Monoxide	CO	1.0	1128	12.5	74.0
Hydrogen	H_2	.1	932	4.0	75.0
Hydrogen Sulfide	H_2S	1.2	500	4.0	44.0

FURNACE-LAP-WELDED PIPE: Pipe which has a longitudinal lap joint that is produced by the forge welding process. In this process, coalescence is produced by heating performed tube to welding temperature and then passing it over a mandrel. The mandrel is located between the two welding rolls that compress and weld the overlapping edges. Typical specification: API 5L. See PIPE MANUFACTURING PROCESS.

FUSION: A process of joining plastic pipe with heat. See HEAT FUSION JOINT.



G

GAS: Natural gas, flammable gas, or gas which is toxic or corrosive.

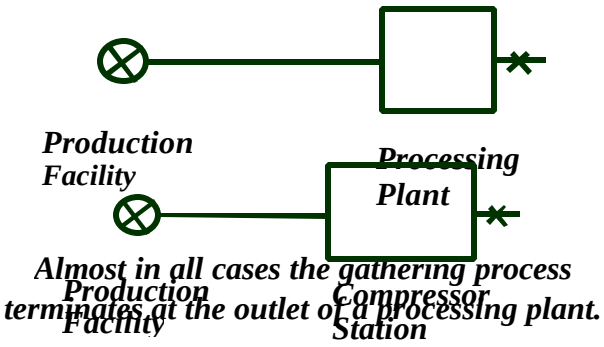
GATE STATION: A location at which gas may change ownership from one party to another (e.g., from a transmission company to a local distribution company), neither of which is the ultimate consumer. Purchased for the sole purpose of resale. Also referred to as city gate station, town border station.

GATE VALVE: A full opening and closing valve depending upon deformation of mating surfaces for control.

GATHERING LINE: A pipeline that transports gas from a current production facility to a transmission line or main. The definition of gathering line is based upon a letter written to Dale Johansen on May 9, 1985. This letter is used as a guideline concerning 4 points where the gathering line terminates. The gathering line can terminate at any of these points based upon population density, distance from busy roads or highways, and location concerning environmental sensitive area. Determination is made on a case-by-case basis.

POINT #1

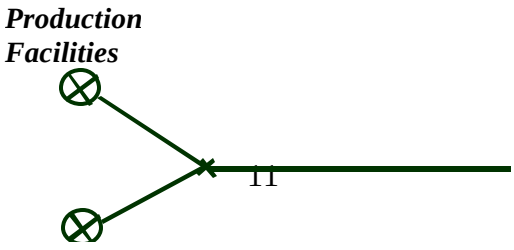
POINT #2



Almost in all cases the gathering process terminates at the outlet of a processing plant.

If there is no upstream processing plant - Outlet of a main line compressor

POINT #3



POINT #4

The point where there is a change in ownership of the product.

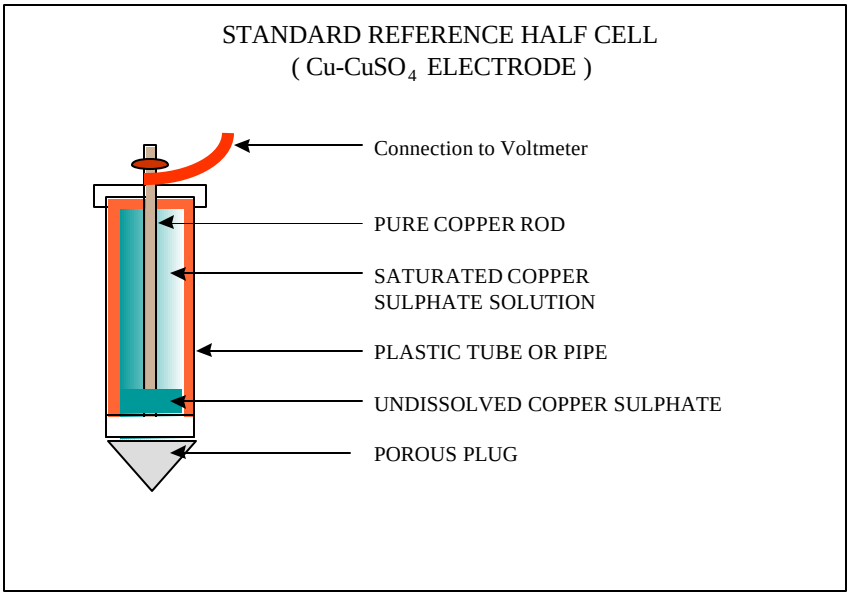
GLOBE VALVE: A valve equipped with an orifice and a stem attached to a plug and matching circular seat. Shut-off is obtained by direct contact of the plug and the seat. Body of valve is normally spherical.

GROUND TEMPERATURE: The temperature of the earth at pipe depth. See AMBIENT TEMPERATURE, TEMPERATURE.

GULF OF MEXICO AND ITS INLETS: The waters from the mean high water mark of the coast of the Gulf of Mexico and its inlets open to the sea (excluding rivers, tidal marshes, lakes, and canals) seaward to include the territorial sea and Outer Continental Shelf to a depth of 15 feet, as measured from the mean low water.

H

HALF-CELL (REFERENCE ELECTRODE): A device, which usually has copper, immersed in a copper sulphate solution. The open circuit potential is constant under similar conditions of measurement. It is used to measure the voltage potential at the junction of the metallic surface and the electrolyte (pipe surface to soil or seawater) with respect to that of the junction of the copper and the copper sulphate in the half-cell.

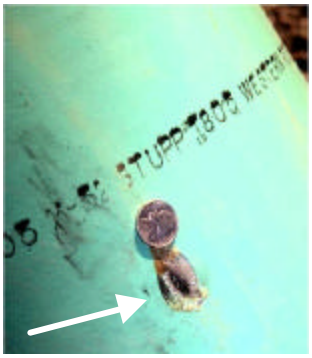


HAZARD TO NAVIGATION: A pipeline where the top of the pipe is less than 12 inches below the seabed in water less than 15 feet deep, as measured from the mean low water.

HEAT FUSION JOINT: A joint made in thermoplastic piping by heating the parts sufficiently to permit fusion of the materials when the parts are pressed together.

HIGH PRESSURE DISTRIBUTION SYSTEM: A distribution system in which the gas pressure in the main is higher than the pressure provided to the customer.

HOLIDAY: A discontinuity or break in the anti-corrosion coating protection on pipe or tubing that leaves the bare metal exposed to corrosive processes.



HOOP STRESS (Barlow's Formula): The stress in a pipe wall acting circumferentially in a plane perpendicular to the longitudinal axis of the pipe and produced by the pressure of the fluid in the pipe. Hoop stress calculation:

$$S = \frac{PD}{2t}$$

S = hoop stress, in psi
P = internal pressure
D = outside diameter of the pipe in inches
t = normal wall thickness, in inches

HOT TAP: The process of making branch piping connections to operating pipelines, mains, or other facilities while in operation. The connection of the branch piping to the operating line and the tapping of the operating line is done while it is under gas pressure.

HOUSEKEEPING: The administrative control that involves containing and removing chemical hazards, (e.g., vacuuming, proper storage and handling, prompt removal and correct disposal of chemical waste).

HYDROCARBON (H.C.) FILTER: A filter used to filter out heavier hydrocarbons when using the CGI. Gasoline, propane, butane and commercial solvents are good examples of heavier hydrocarbons.

I

IGNITION TEMPERATURE: The minimum temperature required to ignite gas or vapor without a spark or flame being present. See FLAMMABLE (EXPLOSIVE) RANGE.

INACTIVE PIPELINE: A pipeline that is being maintained under Part 192 but is not presently being used to transport gas.

INERT GAS: This is commonly referred to as a gas that is non-explosive (non-flammable). The most commonly used inert gas is nitrogen. Operators use inert gas for testing and purging pipelines.

INJECTOR TYPE ODORIZER: A pump type odorizer. The flow rate of the gas stream is monitored by an electronic sensor which, in turn, controls the pump speed.

INPATIENT HOSPITALIZATION : Admission and confinement in a hospital beyond treatment administered in an emergency room or outpatient clinic in which confinement does not occur.

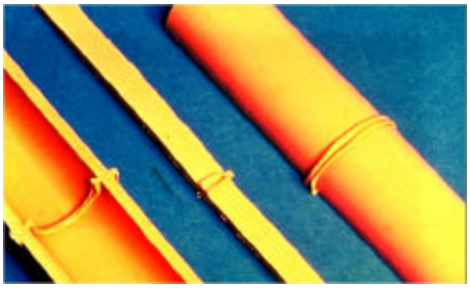
INSTRUMENT PIPING: Pipe, valves and fittings used to connect instruments to main piping, to other instruments and apparatus, or to measuring equipment.

INTERNAL NIGHT CAP: A plug or cap attached to the open end of a line during construction or while making repairs during off work periods to keep foreign matter out of the pipe.

IRON: See CAST IRON, DUCTILE IRON.

J

JOINT : Could mean connection between two lengths of material, such as pipe. Joint can also mean a piece of pipe (i.e., joint of pipe). See LENGTH.



L

LARGE VOLUME CUSTOMER: A customer who receives similar volumes of gas as a distribution center. This may include factories, power plants and institutional users.

LEAKAGE SURVEYS: Systematic inspections made for the purpose of finding leaks in a gas piping system.

LENGTH: A piece of pipe as delivered from the mill. Each piece is called a length regardless of its actual dimension. While this is sometimes called "joint", the term "length" is preferred.

LINE SECTION: A continuous run of transmission line between adjacent compressor stations, between a compressor station and storage facilities, between a compressor station and a block valve, or between adjacent block valves.

LIQUEFIED PETROLEUM GAS (LPG): A gas containing certain specific hydrocarbons which are gaseous under normal atmospheric conditions, but can be liquefied under moderate pressure at normal temperatures. Propane and butane are principal examples.

LIQUEFIED PETROLEUM GAS (LPG)-AIR MIXTURE: Liquefied petroleum gases distributed at relatively low pressures and normal atmospheric temperatures which have been diluted with air to produce desired heating value and utilization characteristics.

LISTED SPECIFICATION: A specification listed in section I of Appendix B of 49 CFR Part 192.

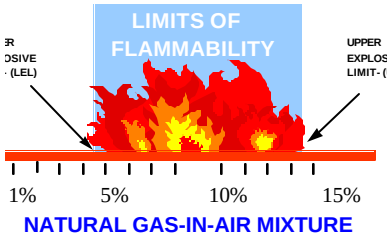
LOCAL DISTRIBUTION COMPANY (LDC): Purchases gas for resale.

LOCK-UP or LOCK-OFF: The point at which a regulator or governor shuts off completely.

LONG-TERM HYDROSTATIC STRENGTH OF PLASTIC PIPE: The estimated hoop stress, in psi, which would result in a failure of the pipe if the pipe were subjected to 100,000 hours of hydrostatic pressure.

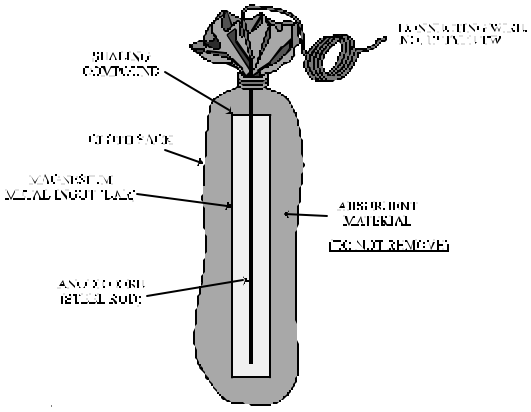
LOW PRESSURE DISTRIBUTION SYSTEM: A distribution system in which the gas pressure in the main is substantially the same as the pressure provided to the customer. This is restricted to residential and small commercial service only.

LEL: Lower Explosive Limit is read from the CGI. LEL is the minimum amount of airborne chemical that must be present in the air-chemical mixture to make it explosive. See FLAMMABLE (EXPLOSIVE) RANGE.

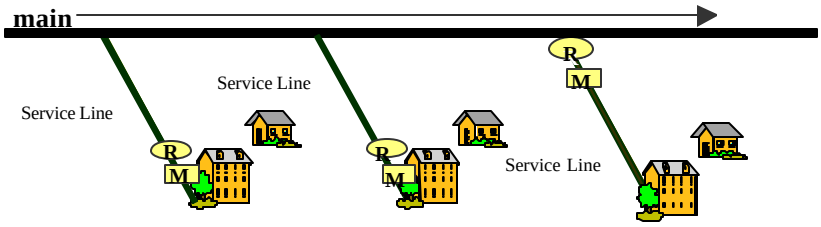


M

MAGNESIUM ANODE: See ANODE.



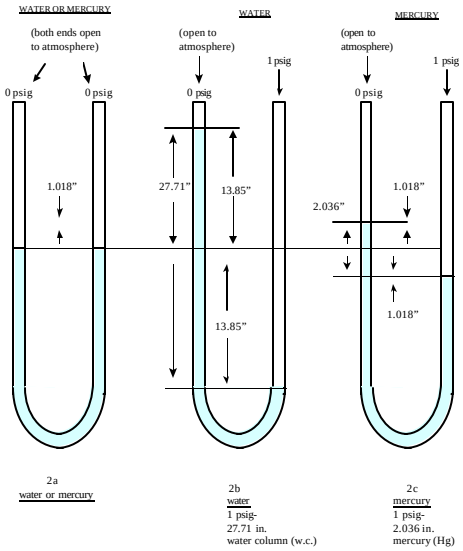
MAIN: A distribution line that serves as a common source of supply for more than one service line.



MALLEABLE IRON: A mixture of iron and carbon, including small amounts of silicon, manganese, phosphorous and sulphur which, after being cast, is converted structurally by heat treatment into primarily a matrix of ferrite containing nodules of temper carbon.

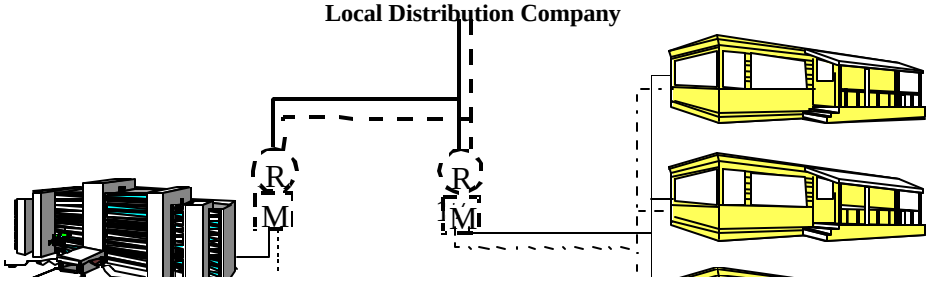
***MANDREL*:** A metal bar that serves as a core around which material (as metal) may be cast, molded, forged, bent, or otherwise shaped.

MANOMETER: A tube in the shape of a U, partially filled with liquid of suitable density. When points of different pressure are connected to respective ends of the manometer, the liquid is pushed up in the low-pressure side of the manometer, and the difference in liquid level between the two sides of the U is an indication of pressure difference. (One side may be open to atmosphere for gauge pressure measurement.)



***MASTER METER SYSTEM*:** A pipeline system for distributing gas within, but not limited to, a definable area, such as a mobile home park, housing project, or apartment complex, where the operator purchases metered gas from an outside source for resale through a gas distribution pipeline system. The gas distribution pipeline system supplies the ultimate consumer who either purchases the gas directly through a meter or by other means, such as by rents.

Operator Responsibility - Master Meter



MAXIMUM ACTUAL OPERATING PRESSURE (MOP): The maximum pressure that occurs during normal operations over a period of 1 year.

MAXIMUM ALLOWABLE HOOP STRESS: The maximum hoop stress permitted for the design of a piping system. It depends upon the material used, the location of the pipe and the operating conditions. See HOOP STRESS.

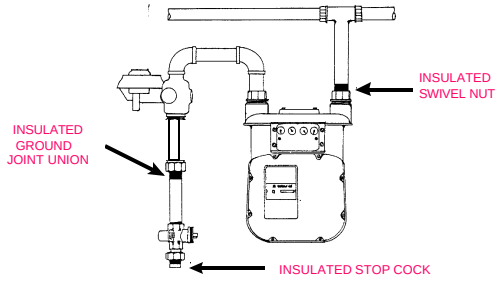
***MAXIMUM ALLOWABLE OPERATING PRESSURE (MAOP*)**: The maximum pressure at which a pipeline or segment of a pipeline may be operated under 49 CFR Part 192.

MAXIMUM ALLOWABLE TEST PRESSURE: The maximum internal fluid pressure permitted for testing, for the materials and locations involved.

MCF: One thousand cubic feet.

MERCAPTAN: An organic chemical compound having a distinctive odor used for odorization of gas streams.

METER SET ASSEMBLY: The piping installed to connect the inlet side of the meter to the gas service line, and to connect the outlet side of the meter to the customer's fuel line.



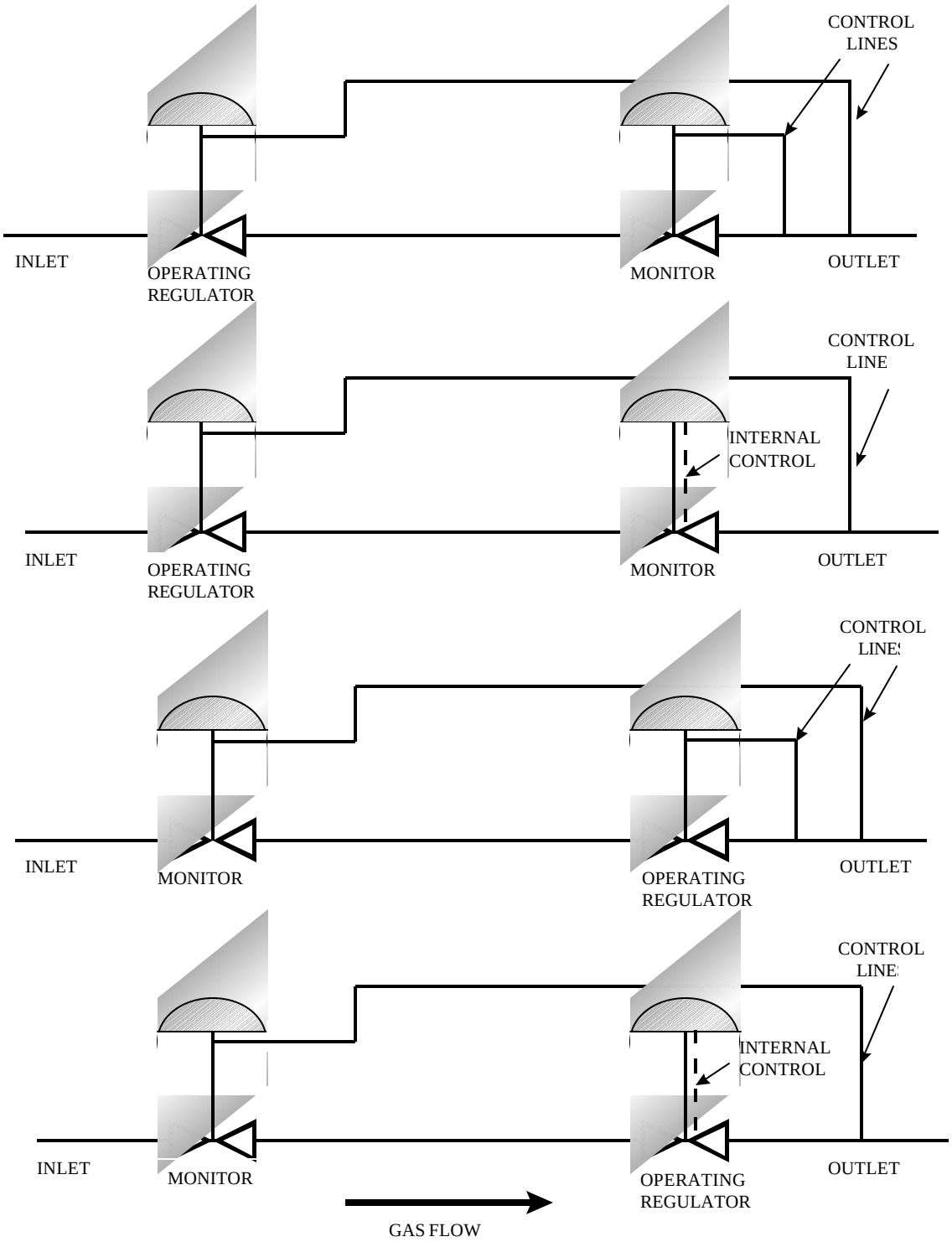
METERS: See CUSTOMER METER, METER SET ASSEMBLY.

METHANE: The lightest in the paraffin series of hydrocarbons. It is colorless, odorless and flammable; it forms the major portion of natural gas, CH_4. See FLAMMABLE (EXPLOSIVE) RANGE.

MITER JOINT: A joint made by cutting the pipe at an angle, then joined together. 49 CFR 192.233 provides guidelines for miter joints in steel pipelines.

MMCF: One million cubic feet.

MONITORING REGULATOR: A pressure regulator, set in series with another pressure regulator, for the purpose of providing automatic overpressure protection in the event of a malfunction of the primary regulator.



MUNICIPALITY: A city, county, or any other political subdivision of a State.

N

NEEDLE VALVE: A small valve that is opened and closed to permit or restrict fluid or gas flow by the movement of a pointed plug or needle in an orifice or tapered orifice in the valve body.

NODULAR IRON: See DUCTILE IRON**.**

NOMINAL WALL THICKNESS (t): The wall thickness, in inches, computed by, or used in, the design formula for steel pipe in 192.105. Pipe may be ordered to this computed wall thickness without adding an allowance to compensate for the under-thickness tolerances permitted in approved specifications.

NON-DESTRUCTIVE TESTING (NDT): Testing in which the part being tested is not rendered unusable.